By floating distilled water on a strong solution of sulphate of magnesia, and passing a continuous current upwards through the two liquids, he found that a layer of magnesia formed at the upper surface of the lower liquid where it touched the water, showing that the water acted as kathode. Since his time Dr. Gore, F.R.S., made a series of experiments, the descriptions of which and his deductions therefrom were published in the Proceedings of the Royal Society for 1881. In these, he states, "that every inequality of composition or of internal structure of the liquid in the path of the current must act to some extent as an electrode."

I venture to think that this should be kept well in mind by those who are studying the place that electrolysis takes in electro-therapeutics. In the animal body, fluids, having inequality of composition or of internal structure, and in contact with one another, exist, and we may reasonably expect them to act as anode and kathode to one another, in the same way that distilled water acted as kathode to the strong solution of sulphate of magnesia. Such being the case when a continuous current passes through an animal tissue, we should surely expect inter (battery) polar decomposition, and know, if we follow the laws of electrolysis, that no inter (electrolyte) polar decomposition can possibly take place. To use the old nomenclature suggested by Faraday: Decomposition may occur between anelectrode and kathelectrode, provided that more than one electrolyte or electrolytic cell be included in the external portion of the battery circuit; but it can take place *only* at the anodes and kathodes and the resulting ions are liberated only there. I am, Sirs, yours sincerely,

Austin Friars, E.C., December, 1889. H. W. D. CARDEW.

COLOTOMY FOR CANCER OF THE RECTUM.

To the Editors of THE LANCET.

SIRS,—This subject has of late attracted so much attention that I think it will interest your readers if I give a brief account of recent experience at the Middlesex Hospital.

Of the inguinal operation I have nothing to say, because it has only lately been performed in one or two cases.

Of 64 cases of cancer of the rectum (males 32, females 32) consecutively under treatment during the seven years from 1882 to 1888, 38 of both sexes were submitted to left lumbar colotomy; of these, 10 died—a mortality of 26·4 per cent. Excision of the rectum was performed in only 4 of these cases, and in 2 cases of cancer of the anus.

Of 18 males who underwent colotomy, 5 died—a mortality of 28 per cent. The causes of death were as follows:—(1) Pyæmia on the twenty-second day after the operation; (2) shock on the day after the operation (in this case the rectum had been excised as well); (3, 4) exhaustion on the seventeenth and twenty-sixth days after the operation; (5) syncope from incessant vomiting, with hæmatemesis, sixteen hours after operation, under chloroform. In 15 cases colotomy was performed to relieve the local disease from irritation by contact with fæcal matter; in the cases that recovered the benefit was very marked, the burning pain and tenesmus previously complained of being in almost every instance completely relieved. Of those who recovered, the average duration of their stay in hospital was thirty-eight days.

Of 14 cases in which colotomy had been performed, the average duration of life, dating from the time when symptoms of the disease were first noticed, was 19·7 months, the longest thirty-nine months: 4 lived from nine to twelve months; 1 from twelve to fifteen months; 3 from fifteen to eighteen months; 1 from eighteen to twenty-one months; 2 from twenty-one to twenty-four months; 2 from thirty-three to thirty-six months; 1 from thirty-six to thirty-nine months.

Of 4 cases in which no operation had been performed, the average duration of life was only 10·9 months, the longest, 24·7 months; 2 lived from three to six months; 1 from nine to twelve months; 1 from twenty-seven to thirty months.

The duration of life subsequently to colotomy in 14 cases averaged 6·5 months, the longest period being twenty-four months; 5 died under one month after the operation; 2 from one to three months; 3 from six to nine months; 1 from nine to twelve months; 2 from twelve to fifteen months; 1 from twenty-one to twenty-four months.

Of 20 females who underwent colotomy, 5 died—a mortality of 25 per cent. The causes of death in these cases were as follows: (1) Syncope under ether during the performance of the operation; (2) shock on the day after the operation; (3) peritonitis on the seventh day after the operation; (4, 5) exhaustion on the tenth and seventeenth days after the operation.

In 15 cases the operation was done to relieve the local disease; here also the benefit as to relief of pain and tenesmus was most marked.

In 5 cases the operation was needed to relieve symptoms of intestinal obstruction. Of those who recovered, the average duration of their stay in hospital was sixty days.

Of 10 cases in which colotomy had been performed, the average duration of life was 29·7 months, the longest period 76·4 months: 1 lived from three to six months; 1 from nine to twelve months; 3 from twelve to fifteen months; 1 from twenty-four to twenty-seven months; 1 from thirty to thirty-three months; 1 from fifty-one to fifty-four months; 1 from fifty-seven to sixty months; 1 from seventy-five to seventy-eight months.

Of 6 cases in which no operation had been performed, the average duration of life was 23·7 months, the longest 39·5 months: 1 lived from nine to twelve months; 1 from twelve to fifteen months; 1 from twenty-one to twenty-four months; 1 from twenty-four to twenty-seven months; 1 from thirty to thirty-three months; 1 from thirty-nine to forty-two months.

The duration of life subsequently to colotomy in 10 cases averaged 6·2 months, the longest period being 33·3 months: 5 died under one month after operation; 1 from one to two months; 2 from six to nine months; 1 from nine to twelve months; 1 from thirty-three to thirty-six months.

For further information on this subject I must refer your readers to the recently published Middlesex Hospital Surgical Report for 1888. I am, Sirs, yours truly,

December, 1889. W. ROGER WILLIAMS.

To the Editors of THE LANCET.

SIRS,—Will you be good enough to allow me space to reply to the criticisms of my colleague, Mr. Jessett, contained in his letter in THE LANCET of Dec. 7th, on my operation for inguinal colotomy for malignant disease of the rectum, which you published in your issue of Nov. 30th.

I accord the "novel method," in contradistinction to "my operation," to my colleague, and again emphasise that I do not wish in any way to detract from him the credit that the idea of this operation emanated from him, and was the outcome of his experience, gained in his experimental work in intestinal surgery on dogs, the report of which he published. With his assistance I performed the operation I described on the three cases "I reported" at the Cancer Hospital on March 2nd, July 30th, and Aug. 6th of this year respectively; two of these cases and the photos of their openings I had the opportunity of showing at the clinical evening of the Medical Society, in conjunction with the one case Mr. Jessett showed. The "novel method" Mr. Jessett described at that meeting and now in his letter differs, he says, in many important particulars from that described by me in my original paper, and he proceeds to mention the points of difference. However, in the one case he brought before the Medical Society he performed the operation (Sept. 28th last) in which the proximal end was cut long and occluded by a piece of rubber band, and the spur removed on the third day, and a remarkably good artificial anus was formed. Aided by the support of a truss he devised to fit the parts, no mucous membrane whatever protruded. The spur of invaginated intestine that Mr. Jessett showed at the same meeting was not removed from the man above alluded to, but from a female, a subsequent case on which he operated (Nov. 8th last), the operation was in itself successful. The report, however, of this case I hope my colleague may give on some future occasion. I quite agree in the dicta laid down by my colleague—viz., "that the bowels should be kept well opened for some three or four days by castor oil or some saline aperient, and the rectum washed out as far as possible once a day with warm water enemata"—a proceeding I thoroughly endorse and always endeavour to have carried out. But if it is possible, and the rectum capable of being relieved, what need be there "yet" for performing inguinal colotomy? More usually, and what actually was the condition in my three cases (reported), the rectum was occluded and impervious by reason of a mass of malignant growth causing complete obstruction of the bowels. Nothing could be got

to pass either up or down. Here, then, the operation was urgently called for. In my three cases each were *in extremis;* there were nausea and vomiting, absolute constipation, tongue coated, all appetite lost, and pulse enfeebled, and extreme emaciation; great torture endured in any attempt to obtain an evacuation, which became impossible. The three patients were actually on the point of death. I submit that in these cases the urgency for relief was so great—for, as is usually found, any proposal of operation at an early stage is put off by patients, and their sanction is not obtained until all hopes are given up—that to carry out my colleague's "novel method," and to await a further "four or five" days before an evacuation could be induced or the passing of flatus possible, and little or no food administered, would, in my small experience, jeopardise any chance of recovery for the patient. Although these cases were *in extremis* at the time of operation, all made a good and rapid recovery and increased in flesh, and two now present an admirable appearance; one has since died. I therefore demur that the "novel method" is at all times applicable in advanced cases of malignant disease of the rectum.

I am, Sirs, yours faithfully,

F. A. PURCELL, M.D., M.Ch.

Manchester-square, Dec. 8th, 1889.

DEFECTS IN THE MANCHESTER SYSTEM OF CHECKING OUT-PATIENT HOSPITAL ABUSE.

To the Editors of THE LANCET.

SIRS,—In THE LANCET of Dec. 7th you kindly notice the letter of Dr. Harris. You will observe that, as far as checking the abuse of the out-patient department at the Royal Infirmary, Manchester, is concerned, the patients may practically be divided into four classes; (*a*) urgency and accident cases, which are admitted at once without any inquiry; (*b*) those making under the "wage limit," who are also admitted; (*c*) those making *slightly over* the wage limit; and (*d*) those making a considerable wage over it. The latter class *may* be refused first treatment by the surgeon or physician on duty that day. Thus, practically all receive *first* treatment. But there are two very vital errors in the above scheme—first, those who are making slightly over the "wage limit" are allowed to attend at the infirmary for one month, on giving an understanding that they are going to, or have joined, the provident dispensary. Now the entrance-fee to the provident dispensary is sixpence, and the weekly subscription one penny, and benefits are not given until membership has existed for four weeks. Therefore by the above rule, if a man pay a little over sevenpence to the provident dispensary he has the power of demanding relief at the infirmary for four weeks, and can at the end of that time cease payments. Such a rule must be expunged. If the provident dispensary had a *cash* department, then the above condition of affairs could be easily met. But as it now is, the four weeks must elapse before he can participate in benefits. It is therefore to be hoped that not only will the committee of the infirmary allow the above rule to lapse, but that the provident dispensary will not only work the provident but a cash department as well. The second vital error is that a doctor of a provident dispensary has a *right* to send a provident dispensary patient to the infirmary for treatment, and that the infirmary must not ask any questions. Now, the chief objection to such an absurd rule is that the provident dispeusary has most unfortunately dropped its "wage limit," and with the result that many of the provident members are in receipt of wages up to 40*s.* per week. Therefore, although the infirmary "wage limit" is 12*s.* and 18*s.*, the provident member making, say, 40*s.* can compel the infirmary doctors to treat him. It is to be hoped the infirmary committee will rescind this rule. It is a great pity that the provident dispensary ceased working its wage limit of 30*s.* I wish the doctors of the provident dispensaries there would meet together and not only insist on the "wage limit" being reintroduced, but would draw up a scale of fees for cash payments, and for surgical, dental, and obstetric work, and for certificates. It seems to be, though, that in Manchester the abuse of hospitals has only been shifted on to the provident dispensaries, and that no real good can be effected until the provident dispensaries are reformed. As we look to Manchester to show the way, I trust this will soon be brought about. It is well known that a great number of club doctors send their sick members to the charities so as to get rid of them. Is it not to be feared that the doctors of the provident dispensaries do likewise? It is very gratifying to see how this question of hospital reform is coming prominently to the front. It is to be hoped that as a profession we shall soon be able to provide the eight and a quarter millions of the industrial classes of this country with other means of providing themselves with efficient medical treatment than the present medical charities and poor law. That we must have a medical service with two departments—one giving treatment for *cash* payments (such plan as adopted by consultants and advised by the College of Physicians), and the other supplying it on the provident or insurance system—is recognised. The prescribing chemist, unqualified assistant, and that land shark of the medical profession, the bogus club doctor, as well as the one who visits for a 1*s.* or 6*d.*, and charges 2*s.* 6*d.* for the bottle of medicine—a cross between a chemist and a doctor—have been with us long enough. If we can sink petty trade jealousies and professional rivalry we shall succeed, but if the principle of the majority—"Never mind you, I'm all right"—be adopted, then it must be left to the lay public to legislate for us.

I am, Sirs, yours faithfully,

Liverpool. ROBERT R. RENTOUL, M.D.

THE PREVENTION OF RABIES.

To the Editors of THE LANCET.

SIRS,—The considerable importance of a portion of the subject matter of your leader on the prevention of rabies, which appeared in THE LANCET of Dec. 14th, is undeniable. And it is because of this very importance that I venture to hope that you will allow me to express an opinion contrary to one contained therein. The question of muzzling or not muzzling has unfortunately developed into a duel between the devout Pasteurian and the pseudo-zoophilist, and, more unfortunately still, the stronger adversary is, as I believe, supporting the wrong cause. The supporter of muzzling undoubtedly takes up a strong position. On the one hand, he has a sure and safe therapeusis for the disease; on the other, an unfailing system of prophylaxis. The question of therapeusis it would not become me to discuss, but against the suggested prophylaxis I must enter a strong protest. It is claimed that by a universal muzzling, applied for a limited time and followed by a strict quarantine, rabies would be stamped out for ever, so far as these islands are concerned. In the first place, and allowing that a universal muzzling is practicable, this doctrine assumes that rabies is a specific, an unalterable disease; that it always was rabies and will be rabies for evermore, or at any rate until eradicated by the muzzling process; and, further, that if all the *materies morbi* of rabies now in existence could be destroyed, the disease would never appear again. Against this view of the matter Pasteur's system of treatment affords a strong argument. It is claimed that by successive cultivations the *materies morbi* undergoes certain changes—in other words, that it obeys certain laws of evolution. If it obeys these laws in the laboratory, it must be allowed to obey them outside. That being so, rabies cannot be said to be a specific disease—at least not in the sense in which the word "specific" is generally used. It follows, then, that if it were possible to eradicate all the *materies morbi* of rabies which existed at a given time, we should have no guarantee that the disease would not appear again in the future, as it must have done in some time past. Leaving, however, this somewhat abstract view of the matter out of the question, there is a nearer and more practical point to be considered: that is, Is muzzling likely to lower to any appreciable extent the present annual mortality from hydrophobia? At the outset it is noticeable that, whilst the muzzling order now in force in certain localities carefully provides for the muzzling of dogs which have not got rabies, it affords a remarkably inefficient protection against those which have; for under the order the dog is only muzzled for the hour or two out of the twenty-four during which he happens to be out of doors. Hence the chances are about twelve to one that the dog will not have his muzzle on when the disease first manifests itself, and he certainly will not wait then to have the muzzle applied before he starts on his rabid career. It seems to have been overlooked, too, that a far sterner and more scientific method of prophylaxis against rabies has long been in force: that is, as soon as a dog shows signs of rabies it is promptly killed. What more thorough system of prophylaxis could possibly be adopted? Take the human